

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested in view of the foregoing amendments and discussion presented herein.

1. Rejection of Claims 1-15, 19-31 and 34-39 under 35 U.S.C. § 112.

Claims 1-15, 19-31 and 34-39 were rejected under 35 U.S.C. § 112, second paragraph. The Office Action asserts that the language "*wherein said rate value m is the rate at which acknowledgements are communicated from the receiver to control the number of back-to-back packets to be sent by the sender per acknowledgment (ACK) sent by the receiver*", is merely a logical truth statement, and will be treated as stating "*that the receiver specifies the amount of sequential packets to be transmitted.*"

However, the Applicant respectfully submits that the claim language clearly conveys that the receiver controls the number of back-to-back packets to be sent, by sending the value m which is a rate value. It should be readily understood that rate values are traditionally given as X per Y, such as, for example gallons per hour (gallons/hour), feet per second (feet/second), etc. In the claim language, m communicates the "*number of back-to-back packets to be sent by the sender*" per "*acknowledgment (ACK) sent by the receiver*" (e.g., *#b-to-b packets/acknowledgement*).

In the interest of eliminating any confusion regarding the claim language, the Applicant has amended this element, by splitting it into two separate elements, with the second part now stating in Claim 1 that "*wherein said rate value m is given as the number of back-to-back packets to be sent by the sender [[per]] for each said acknowledgment (ACK) sent by the receiver*". Claims 1, 14 and 26-27 have been amended in this manner using similar language.

In view of the foregoing, the Applicant respectfully submits that the rejection under 35 U.S.C. § 112 has been fully addressed and overcome.

2. Rejection of Claims 1-7, 12-15, 19-21, 27-31, 34-37 and 39 under 35 U.S.C. § 103(a).

Claims 1-7, 12-15, 19-21, 27-31, 34-37 and 39 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Patel et al. (U.S. Patent No. 6,731,600) in view of Bavadekar (U.S. Publ. No. 2003/0009571). The Applicant will hereinafter refer to those references as the Patel / Bavadekar combination.

After carefully considering the grounds for rejection, the Applicant respectfully traverses the grounds for rejection for the reasons that will now be discussed.

(a) Claims 1, 14, and 27. Claims 1, 14, and 27 are the independent claims in the above group of rejected claims. As will be shown, the Patel / Bavadekar combination does not teach the structures, actions and interdependencies which are recited in those claims, and, further, does not establish *prima facie* obviousness or any basis for an obvious rejection.

Considerations of Patel Reference

Patel is directed to a "*System and Method for Determining Network Conditions*" that sends a first and second packet (e.g., time stamp) from a server to a client and reports the latency, as shown in FIG. 3 and FIG. 4. The Office Action admits that "*Patel did not explicitly state controlling the length of packet trains transmitted by the sender in response to altering the rate at which acknowledgements (ACKs) are communicated from the receiver to the sender as based on estimated network bandwidth and wherein said rate at which acknowledgements are communicated by the receiver comprises the number of back-to-back packets to be sent by the sender per each acknowledgment (ACK) sent by the receiver*".

Furthermore, Patel does not teach "*means for the receiver to control sender packet train size in response to bandwidth estimations by changing a rate value *m* at which receipt acknowledgements (ACKs) are communicated from the receiver to said sender, and in response to which the sender transmits a corresponding number of packets back-to-back*", or the other interoperable aspects found in other elements of

Claim 1 and the other independent claims.

Considerations of Bavadekar Reference

The Office Action then cites Bavadekar to create the Patel / Bavadekar combination used as a basis for rejecting the Applicant's claims. Bavadekar is directed to a *"System and Method for Providing Tunnel Connection Between Entities in a Messaging System"*. More specifically, Bavadekar is directed to a specific type of network connection and does not teach the explicit back-to-back packet indicator as recited in the rejected claims. Accordingly, the Patel / Bavadekar combination does not provide a proper basis for the rejection for the rejection since the cited combination does not teach or otherwise render obvious the entirety of each rejection claim.

Note that Bavadekar's Abstract describes *"An HTTP tunnel connection layer is described that may be used to provide reliable, full duplex virtual connections between entities (e.g. clients and brokers) in a distributed application environment using a messaging system."*

Further noteworthy is that the Office Action asserts that Bavadekar teaches explicit marking of back-to-back packet trains. That assertion is incorrect, however. There is no such teaching of back-to-back packets and/or back-to-back packet control in Bavadekar.

Note also that the only portion of Bavadekar cited in the Office Action as teaching explicit back-to-back packet marking is Paragraph [0077]. However, paragraph [0077] describes *"Using a sliding window protocol provides the ability to control the rate at which packets are transmitted to a receiver"*. The receiver communicates its level of buffer filling to the transmitter – **but does not set the "number of back-to-back packets"** as recited in Applicant's Claim 1 or the Applicant's other independent claims.

There is simply no discussion of controlling back-to-back packet trains in Bavadekar's Paragraph [0077]. Furthermore, the Applicant finds nothing within Bavadekar which provides any support for the rejection. In performing a text search on

the Bavadekar reference, no mention of "*back-to-back*", "*back to back*", "*packet trains*" or "*packets*" or anything analogous thereto was found therein.

Bavadekar's Paragraph [0077] teaches that "*The receiver may send a packet or packets to notify the sender that the receiver can receive 50 packets*". This paragraph is summarized by Bavadekar as follows: "*Thus, the sender never sends more packets to the receiver than the quantity of packets the receiver has notified the sender it can receive.*"

Therefore, it should be appreciated that Bavadekar only teaches the amount of packets which can be received; Bavadekar does not teach or otherwise suggest controlling back-to-back packet sending. In contrast, the Applicant's independent claims recite what is meant by the back-to-back packets, such as recited in Claim 1 as "*within said device, for sending packets of a sequence in a back-to-back nature, wherein back-to-back packets are packets which are communicated, with no delay between the back of one packet and beginning of the next packet, one after another in a single burst within the sequence of packets*".

In addition, in the paragraph that follows Paragraph [0077] (paragraph [0078]), Bavadekar describes an embodiment of sending acknowledgements in which "each packet received by the receiver may be acknowledged with a packet sent to the sender. The acknowledgement packets may each include information indicating the current receiver buffer size (i.e., the number of packets that the receiver can currently receive)." Since the above one-acknowledgement per-packet sending is utilized with the sliding window protocol described in Bavadekar's Paragraph [0077], it follows that Bavadekar is very clearly not using the ACK rate for controlling back-to-back packet sending. Note also that, throughout the reference, Bavadekar describes sending and receiving single packets, such as in paragraph [0082] "*The HTTP tunnel drivers may send one request or receive one packet at a time*", wherein the objects of the tunnel operation itself in Bavadekar has nothing to do with sending back-to-back packets.

For any of these reasons, the aforementioned features of independent Claim 1,

which are similarly recited in Claims 14 and 27, cannot reasonably be said to be taught or rendered obvious by the Patel / Bavadekar combination. The failure of an asserted combination to teach or suggest each and every feature of a claim remains fatal to an obviousness rejection under 35 U.S.C. § 103, as per the MPEP:

2143.03 All Claim Limitations Must Be Taught or Suggested

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Section 2143.03 of the MPEP requires the "consideration" of every claim feature in an obviousness determination. To render Claims 1, 14 and 27 unpatentable, however, the Office Action must do more than merely "consider" each and every feature for this claim. Instead, the asserted combination of the patents to Patel and Bavadekar must also teach or suggest each and every claim feature.

Accordingly, the Bavadekar reference in no way teaches or suggests the aspects of the invention which were admittedly lacking in the Patel reference, whereby a *prima facie* case of obviousness has not been established. Therefore, the Patel / Bavadekar combination fails to support the rejection.

Fundamental Defects in the Patel / Bavadekar Combination

Lack of Articulated Reasoning for Combination

The Office Action proposes the Patel / Bavadekar combination on the stated basis that "*in order to better provide congestion correction by alleviating a transmitter from determining ideal transmittal parameters based on what the transmitter assumes is the current network condition.*"

However, merely asserting that a benefit of the modification exists, as is done in

the rejection, does not provide the “*articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness*,” required under *KSR International Co. v. Teleflex Inc.* 82 USPQ2d 1385, 1396 (2007). By definition, every patentable invention is “*beneficial*” – and arguendo every invention contemplates at least some new benefit(s) in arriving at the invention - certainly this does not render the invention obvious or expected. No supporting documentation has been advanced in the Office Action to support the rationale for the rejection.

Because every modification or element has a corresponding use or benefit, the above reasoning could be applied to any improvement. It appears therefore that “*hindsight construction*” may have played a leading role in arriving at the present ground for rejection in the Office Action, which though perhaps difficult to avoid in many cases, is nonetheless impermissible in making a *prima facie* showing of obviousness.

As provided in M.P.E.P. § 2142, the Supreme Court in *KSR* specified that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. “[R]ejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). Furthermore, the Examiner must make “explicit” this rationale of “the apparent reason to combine the known elements in the fashion claimed,” including a detailed explanation of “the effects or demands known to the design community or present in the marketplace” and “the background knowledge possessed by a person having ordinary skill in the art” (*KSR*, page 14).

Combination Changes Operating Principles

The Office Action fails to make explicit the combination and disclose specifically how the elements of the Bavadekar reference could be combined with the Patel reference teachings. The rejection has a number of failing in this regard.

The Bavadekar reference is directed to a specific form of communication referred to as “*HTTP tunnel connections*” within a “*tunnel layer*” and which provides for

"expanding the scope of from where clients can access brokers" (refer to Abstract). The Patel reference and the instant application are not directed to brokers and tunnel connections.

As described in a previous section, the Bavadekar reference does not teach or suggest back-to-back packet control. Therefore, it is not surprising that the Office Action fails to describe how these references may be combined. It appears that the packet control described in paragraph [0077] of Bavadekar and relied upon in support of the rejection, cannot be combined with the Patel technique of determining the time between a first and second packet sent over the network (as in 204 of FIG. 2, 300-312 in FIG. 3, and 404-420 in FIG. 4). It is problematic, for example, to attempt to combine the *"sliding window protocol"* which is *"used to guarantee that no more than a fixed number of packets are transmitted to a receiver"* (refer to paragraph [0077] of Bavadekar), be integrated with the latency detection mechanism in Patel to arrive at the teachings of the present invention. Of course, as Bavadekar does not describe controlling back-to-back packet sending, the combination intractably fails in both areas.

It is readily apparent that the principles of operation of the cited references would need to be changed and a significant number of additional elements added in order to arrive at a device which operates according to what is recited in the claims of the instant application, which is contrary to the provisions of the MPEP as follows:

MPEP 2143.01

"VI. THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)."

Consequently, there is no valid rationale for combining Patel and Bavadekar, the Patel / Bavadekar combination does not teach or render obvious the combination of elements in each of the rejected claims, fails to perform as recited in Applicant claims,

and appears to be an impossible combination that would require changing operating principles of the references.

Therefore, the Applicant respectfully requests that the rejection of Claims 1, 14 and 27, and the claims that depend therefrom, be withdrawn and those claims be allowed.

(b) Claims 2-7, 12-13, 15, 19-21, 28-31, 34-37 and 39.

Claims 2-7, 12-13, 15, 19-21, 28-31, 34-37 and 39 depend from independent based claims whose patentability has been outlined above. Therefore, the rejection of these claims should be withdrawn and the claims should be allowed.

Therefore, Applicant respectfully requests that the rejection of be withdrawn and the instant application allowed to issue.

3. Rejection of Claims 10, 24 and 26 under 35 U.S.C. § 103(a).

Claims 10, 24 and 26 were rejected under 35 U.S.C. § 103(a) as unpatentable over Patel et al. (U.S. Patent No. 6,731,600) in view of Bavadekar (U.S. Publ. No. 2003/0009571), and further in view of Matsunaga (U.S. Publ. No. 2002/0141448). This combination will be referred to as the Patel / Bavadekar / Matsunaga combination.

(a) Claim 26. Independent Claim 26 is directed to a system for controlling network congestion.

In support of the rejection, the Office Action asserts that the Patel / Bavadekar, combination cited against independent Claims 1, 14 and 27 as previously discussed, teaches all aspects of Claim 26 except for the explicit marking of back-to-back packets by changing "*maximum segment size (MSS)*".

However, as has been shown in regard to Claims 1, 14 and 27, the Patent / Bavadekar combination is improper and has intractable shortcomings, including a failure of the combination to teach all aspects of the invention, and inability with regard to combining the references as they are directed to different objects and operating

principles. Since the Office Action sets forth nothing in the Matsunaga reference that overcomes those shortcomings, there exists no *prima facie* support for the rejection of Claim 26.

In addition, the Matsunaga reference also fails to teach what it is relied-upon to teach according to the Office Action.

In support of the rejection, the Office Action refers to Matsunaga paragraph [0074] lines 6-12, and paragraph [0085] lines 1-7, which are duplicated below (with emphasis added).

[0074] According to the first embodiment, the MSS option rewrite unit 306 in the packet fragmentation device 40 determines the MSS value used between the transmitting hosts 10 and the packet transfer apparatus 20 so as to prevent the data segment size conversion ratio from exceeding an upper limit set in advance. A too high ratio of a data segment size to be converted in the packet transfer apparatus 20 may cause burst data transfer and congestion of a network for transferring packets. These problems can be avoided by adjusting the data segment size conversion ratio by the MSS option rewrite unit 306 so as not to exceed the upper limit externally set in advance.

[0085] If the MSS value obtained from the MTU value of the next-hop network is smaller than the MSS used between the transmitting hosts 10 and the packet transfer apparatus 21, the MSS value used between the transmitting hosts 10 and the packet transfer apparatus 21 must be changed. Thus, the received ICMP unreachable packet is directly transferred to the transmitting hosts.

It can be seen from the above, that the use of the MSS in these instances is conventional for controlling segment size in relation to the MTU. There is no mention or suggestion of altering packet sizes below the MSS to provide for a substantially unrelated signaling purpose, and even more particularly toward indicating back-to-back packet status, in the locus of control provided according to the present invention. It is well recognized in the field that the number of bytes of MSS + TCP header + IP header = MTU bytes. In the paragraphs upon which the Examiner relies, the Matsunaga reference simply alters MSS based on changing MTU values, such as "the MTU value

of the next-hop network is smaller". MSS is not changed to provide a signaling means, but "so as not to exceed the upper limit", as Matsunaga states it.

Therefore, Matsunaga does not use changes to the segment size for anything other than changing the Maximum Segment Size, it does not use it for other indications. Combining the conventional use of MSS with the other references does nothing to advance those references toward teaching the elements of the instant claims.

Accordingly, the Patel / Bavadekar / Matsunaga combination does not teach that for which it is relied upon, does not teach or render obvious all of the elements of Claim 26, and, therefore, does not provide a proper basis for rejecting Claim 26.

Therefore, the Applicant respectfully requests that the rejection of Claim 26 and the claims which depend therefrom, be withdrawn and those claims be allowed.

(b) Claims 10 and 24.

Claims 10 and 24 depend from independent based claims whose patentability has been outlined above. Therefore, the rejection of these claims should be withdrawn and the claims should be allowed.

In addition, the Patel / Bavadekar / Matsunaga combination does not teach or render obvious using MSS for anything besides its conventional use in setting a segment size (as discussed for Claim 16 above).

The rejection fails to establish a *prima facie* case of obviousness of Claims 10 and 24 based on the cited combination. **Therefore, Applicant respectfully requests that the rejection of Claims 10 and 24 be withdrawn and that those claims be allowed.**

4. Rejection of Claims 11, 22 and 38 under 35 U.S.C. § 103(a).

Claims 11, 22 and 38 were rejected under 35 U.S.C. § 103(a) as unpatentable over Patel et al. (U.S. Patent No. 6,731,600) in view of Bavadekar (U.S. Publ. No. 2003/0009571), and further in view of Zhang (U.S. Publ. No. 2005/0144303).

However, Claims 11, 22 and 38 are patentable for at least the reasons that their independent base claims are patentable as discussed above. In addition, the Patel / Bavadekar / Zhang combination does not overcome the shortcomings of the Patel / Bavadekar combination. The use of a slow start threshold is known, but is not taught for interoperable use with the back-to-back packet control and its explicit indication as recited in the instant claims, and does not overcome the shortcomings of the Patel and Bavadekar references. The further combination of Zhang with Patel and Bavadekar does not teach or render obvious the subject matter of the base claims or these dependent claims

Therefore, the Applicant respectfully requests that the rejection of Claims 11, 22 and 38 be withdrawn and that those claims be allowed.

5. Rejection of Claim 25 under 35 U.S.C. § 103(a).

Claim 25 was rejected under 35 U.S.C. § 103(a) as unpatentable over Patel et al. (U.S. Patent No. 6,731,600) in view of Bavadekar (U.S. Publ. No. 2003/0009571), and further in view of Official Notice.

Claim 25 depends from an independent claim whose patentability has been demonstrated above and, therefore, is allowable for at least the reasons that the base claim is allowable. The further combination of Official Notice with Patel and Bavadekar does not teach or render obvious the subject matter of the base claims or Claim 25.

Therefore, the Applicant respectfully requests that the rejection of Claim 25 be withdrawn and the claim allowed.

6. Amendment of Claims 1, 14 and 26-27.

Independent Claims 1, 14, 26 and 27 have been amended to recite with more particularity what is meant by the “rate value *m*” on a separate line of the claim, and replaces the “*per*” with “*for each said*”, having equivalent meaning in the context while being less likely to be misunderstood.

In response to Examiner rejection under 35 U.S.C. 112 second paragraph, the Applicant has amended Independent Claims 1, 14, 26 and 26 for improved readability. Specifically, a portion of the description of "*rate value m*" is moved to another line indicating that "*rate value m is given as the number of back-to-back packets to be sent by the sender for each said acknowledgment (ACK) sent by the receiver.*"

7. Amendments Made Without Prejudice or Estoppel.

Notwithstanding the amendments made and accompanying traversing remarks provided above, the Applicant has made these amendments in order to expedite allowance of the currently pending subject matter. However, the Applicant does not acquiesce in the original ground for rejection with respect to the original form of these claims. These amendments have been made without any prejudice, waiver, or estoppel, and without forfeiture or dedication to the public, with respect to the original subject matter of the claims as originally filed or in their form immediately preceding these amendments. The Applicant reserves the right to pursue the original scope of these claims in the future, such as through continuation practice, for example.

8. Conclusion.

Based on the foregoing, the Applicant respectfully requests that the various grounds for rejection in the Office Action be reconsidered and withdrawn with respect to the presently amended form of the claims, and that a Notice of Allowance be issued for the present application to pass to issuance.

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In the event any further matters remain at issue with respect to the present application, the Applicant respectfully requests that the Examiner please contact the undersigned below at the telephone number indicated in order to discuss such matter prior to the next action on the merits of this application.

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Respectfully submitted,

/Rodger H. Rast/

John P. O'Banion, Reg. No. 33,201
Rodger H. Rast, Reg. No. 45,853
O'BANION & RITCHEY LLP
400 Capitol Mall, Suite 1550
Sacramento, CA 95814
(916) 498-1010